ATOMIC ENERGY Letter

THE FIRST AND ONLY ATOMIC [illegible] SERVICE

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS, INC., 509 FIFTH AVENUE, NEW YORK 17, N. Y.

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Dear Sir:

The foreign isotope export program of the USAEC has now been broadened so that foreign users, previously limited to purchasing some twenty-six isotopes, will now be able to purchase a total of ninety-nine different types. The aim of the enlarged program was said by the USAEC to be wider international cooperation in science. The more useful of the newly-available isotopes include: cesium-137; yttrium-91; selenium-75; tantalum-182; chromium-51; nickel-59 & 63; tungsten-185; rubidium-86.

The recent issue of 324,000 shares of its common stock offered by Victoreen Instrument Co., Cleveland, at $4.00 per share, has been oversubscribed, according to an official of that firm. A substantial portion of the proceeds from the stock sale will be used by Victoreen for working capital. The company, which now has on hand the largest backlog of orders in its history, manufactures X-ray measuring instruments as well as medical and industrial instruments for the atomic energy program. Also in production are specialized component parts, including Geiger counters and electrometer tubes, hi-meg resistors, vibrators, and voltage regulators.

The appointment of Kelley-Koett Manufacturing Co., Cincinnati, as exclusive distributors of the high-voltage X-ray equipment for the medical therapy and industrial radiography made by the High Voltage Engineering Corp., Cambridge, Mass., was announced last week. Kelley-Koett (now controlled by Tracerlab, Inc., Boston) which has specialized in the medical X-ray field since 1900 with standard low voltage X-ray equipment, will thus enlarge its scope with the addition of this high voltage equipment. High Voltage engineering was founded five years ago to develop two to 10 million volt Van de Graaf electrostatic generators for deep X-ray cancer therapy, cathode ray sterilization of pharmaceuticals and foods, industrial radiography, and nuclear particle acceleration. High Voltage Engineering will continue to sell and service X-ray equipment in the New England area.

Following the recent affiliation of Landsverk Electrometer Co., with Technical Associates, Glendale, Calif., new quartz fiber instruments have been put into production. Now announced as available by the Landsverk-Technical Associates group, is the model L-26 dosimeter, with a range of 0-200 mr. This instrument, which is ¼-in. in diameter, by 3-5/8 in. long, has a barrel of conducting laminated bakelite, hermetically sealed. The unit is battery operated, with the battery life the same as its shelf life of 1½-2 years. Charging of the dosimeter is done with Landsverk's L-21 charger.

A Division of Supply and Construction has now been established by the USAEC. Edward J. Bloch will head it; he formerly was deputy director of the USAEC's division of production.

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RAW MATERIALS...radioactive mineral reports & discoveries...

UNITED STATES - Marysvale, Utah: Some 12,000 feet of core drilling has been completed here, under USAEC contract, with 12-21,000 more contemplated. A radiometric map, covering the central two square miles, has also been completed. It shows, for this uranium-rich area, the surface "count". While the uranium here is being prospected by numerous small claim holders, the largest operator in the area is the Vanadium Co. of America.....Big Bear Lake, Calif.: After some five months of exploration and analysis, a body of what is believed to be pitchblende ore has been discovered in the Van Duzen Canyon, at a point approximately seven miles from the town of Big Bear Lake. The deposits occur on property which was mined years ago for lead and silver. Currently, a camp has been established in Van Duzen Canyon, with all necessary mining equipment; the crew is now at work sinking a new shaft to encounter the ore at depth. Ten per cent of the property is owned by Uranium Co. of Nevada.

AUSTRALIA- Uranium has been found in the State of Victoria, some 150 miles north east of Melbourne. Uranium deposits have already been proved in South Australia and in the Northern Territory, but this is the first discovery of active uranium ore in Victoria. The Australian government has offered rewards for prospectors who find payable deposits of radioactive ores, and reportedly some thousands of pounds in reward money have already been paid.

SOUTH AFRICA- Adjustments in the taxation of gold mining companies producing uranium are provided for in a new finance bill introduced by Mr. Havenga, the Finance Minister, in the Union Assembly. The Bill allows gold mining companies operating on Government leases, in determining profits, to merge all expenditure and revenue in connection with the recovery of uranium, with gold mining expenditure and revenue. In addition, it provides that, in determining profits of which a share is payable to the State in terms of a mineral lease, the interest on money borrowed for the purpose of producing uranium may be deducted.

RADIOISOTOPES & IONIZING RADIATION...research applications...

Papers recently presented before the Institute of Physics, in London, concerned the use of radiochemistry and its applications in analytical work. It was pointed out in one paper, by Winteringham, Bridges, and Harrison, that application of radioactive tracer techniques, to paper chromatography in particular, frequently enabled the separated components not only to be located and characterized, but to be estimated quantitatively. Three ways of doing this (it was stated) are: (1) Labelling the mixture with one or more radioactive isotopes before chromatography, (2) Treating the paper chromatogram with suitably labelled reagents, and (3) Neutron activation of the paper chromatogram; in this case pretreatment of the chromatogram with a suitable non-radioactive reagent would probably be necessary. In all three cases, the final chromatograms were scanned radiometrically and the separated components located and estimated quantitatively. An apparatus for automatically scanning undimensional paper chromatograms radiometrically had been developed and successfully used on a routine basis, the authors reported.

In describing paper chromatography of radioactive penicillin, at this meeting (above), Smith and Allison noted that opportunity had been taken to check the results of the radioactivity measurements. The zones corresponding with individual penicillins had been cut from some of the paper strips, radio-autographs being used as guides. Radioactivity in the segments had been measured either by cutting them into squares which were counted individually under a thin-window G-M tube, or alternatively by extraction with hot dilute buffer solution, with the extracts being counted after evaporation of the planchettes. Results by the three methods agreed well, Smith and Allison stated.

Application of radioactive analysis to arsenic determination was also discussed at this meeting (above), by Smales and Pate. They pointed out that a determination of the normal arsenic level of some biological material such as human hair, nails, blood and urine, and the internal organs of a mouse, had been proved possible with sample weights often little more than a few milligrams.

ATOMIC PATENT DIGEST...latest U.S. applications & grants...

Preparation of compacts of high density uranium hydride. Comprised heating uranium metal which is in the form of a plurality of pieces (having passages between them for access of hydrogen) to a temperature in the neighborhood of 200 deg. C. in a hydrogen atmosphere and confining the hydride volume to the original volume of the metal during the heating period to cause compacting pressures in excess of five tons per square inch to be generated. U.S. Pat. No 2,558,377, issued June 26, 1951; assigned to United States of America (USAEC).

Cable testing system and method. Apparatus for determining the position of a conductor supported within a body relative to the exterior surfaces of the body. U. S. Pat. No. 2,558,485, issued June 26, 1951; assigned to United States of America (USAEC).

Pump for electromagnetically pumping a conducting liquid metal. The pumping mechanism comprises a conduit for the liquid metal, means secured to opposite sides of said conduit, and arranged to pass an electric current through the conducting liquid in a direction at right angles to the direction of flow of the liquid in the conduit, and means for establishing a magnetic field at right angles to both the direction of flow and the current. U. S. Pat. No. 2,558,698, issued June 26, 1951; assigned to United States of America (USAEC).

Uranium-containing films and method of preparing them. The production of uranium containing films and a method of forming thin, adherent coatings of uranium, a uranium oxide or fluoride of uniform thickness on a supporting base. (The article produced in this manner is useful in analytical procedures for determining the isotopic composition of a uranium sample, these procedures comprising counting the alpha particles emitted by a given weight of the uranium compound. U. S. Pat. Application No. 690,807, made by Benjamin Carroll, New York, N.Y.; assigned to United States of America. (Published June 26, 1951).

Method of determining the power output of a neutronic reactor. Comprises introducing into the reactor abutting layers of thermal neutron fissionable material and phosphorescent material and maintaining these layers in the reactor long enough to produce substantial fission. The layers are then removed from the reactor, and the luminescence of the phosphorescent layer is measured while retaining the layers in abutment, so that the decay of luminescence of the phosphorescent layer is diminished by the continued radioactivity of the fissionable material layer. U. S. Pat. No. 2,558,919, issued July 3, 1951; assigned to United States of America (USAEC).

Detection and measurement of penetrative radiation. The use of a phosphor element for the detection and measurement of penetrative radiation such as gamma rays, by homogeneously distributing the phosphor throughout a matrix, so that the relatively small effective dimensions of the phosphor material for the interception and conversion of penetrative radiation are enlarged by the volume of this matrix. U. S. Pat. No. 2,559,219, issued July 3, 1951; assigned to Texaco Development Corp., New York, N.Y.

Process of preparing a source of beta emissions. Comprises admixing an isotope capable of being irradiated by neutrons to produce a beta emitter with an organic resin containing no component elements other than carbon, hydrogen and oxygen; shaping the resulting mixture into a desired shape; and subjecting the shaped mixture to neutron irradiation. U. S. Pat. No. 2,559,259, issued July 3, 1951; assigned to United States of America (USAEC).

Method of casting methyl methacrylate. Comprises dissolving polymeric methyl methacrylate in monomeric methyl methacrylate with the aid of a solvent from the class consisting of methylene dichloride, methyl formate, acetone and chloroform, removing the solvent by vacuum distillation, essentially without initiating polymerization of the monomer and casting the resulting polymer-monomer solution at a temperature not in excess of 50 deg. C. U. S. Pat. No. 2,559,345, issued July 3, 1951; assigned to United States of America (USAEC).

PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

New Geiger-Muller counter (mark 1, model 15X), filled with an infinite life self-quenching mixture which can be operated in regions of high ambient temperature. The counter is maintained at room temperature by a stream of water flowing through coiled copper tubing soft-soldered onto the stainless steel tube which makes up both the wall and the cathode of the counter. When operated at ambient temperature of 142 deg. C., manufacturer states this counter showed no detectable difference in characteristics from counter operating at room temperature. The counter is filled with an argon-xenon-oxygen-nitrogen infinite-life mixture. Its threshold is approximately 1,500-volts, plateau approximately 150 volts, and background about 50 counts /minute, manufacturer states.--Radiation Counter Laboratories, Inc., Chicago 8, Ill.

Alpha, beta, gamma survey meter, model SU-5A. Lightweight, portable, battery operated, weatherproof instrument which serves as both a radiation dosage rate meter and a monitoring instrument. Ranges: 0.02, 0.2, 2.0, and 20 mr/h; 100, 1,000, 10,000, and 100,000 CPM. Using this manufacturer's P-17 probe, said to be sensitive to gamma rays and to beta rays above approximately 0.3 MEV. With this manufacturer's P-18 probe, said to be sensitive to beta rays as low as 0.1 MEV and to alpha particles. --Tracerlab, Inc., Boston 10, Mass.

AT THE ATOMIC CITIES & CENTERS IN THE UNITED STATES...

OAK RIDGE, Tenn.- The advent of atomic energy has greatly widened the field of autoradiography, Dr. Julian H. Webb, Eastman Kodak research physicist recently explained to the course in autoradiography now underway at the Oak Riege Institute of Nuclear Studies here. Dr. Webb, one of the course instructors, reminded the Oak Ridge group that the technique has been used for years in the study of naturally radioactive parts of minerals such as radium, actinium and thorium. As long as the radioactive elements were limited to the few that occur naturally, the field was limited, he said. But use of the atomic pile today permits production of radioisotopes of practically all the elements of the periodic table and in relatively great abundance, Dr. Webb pointed out. As an indication of the high sensitivity of the method of track counts, in autoradiography, Dr. Webb stated that analytical microchemical techniques require the presence of about 10 billion atoms for study. Spectrographic analysis under favorable conditions requires about 1 million billion atoms, whereas track radiography with isotopes of moderate half-life (about 10 days) makes possible the detection of the presence of about 10 thousands atoms.

Three new sponsoring institutions have now been elected to the Institute of Nuclear Studies here. These institutions- Florida State University, the University of Maryland, and the University of Puerto Rico--bring to a total of 29 the number of sponsoring organizations of the Institute, which is a non-profit educational corporation, comprised of its sponsoring universities. Its major energies are concerned with the fostering of university participation in the nation's atomic energy program. The Institute holds a contract with the USAEC under which its programs are carried out and financed.

RICHLAND, Washington- Pollution studies of the Columbia river, to ensure that no hazards are due to radioactive contamination by the Hanford Plutonium Works, are now being supplemented by further work of the U. S. Public Health Service. As part of its research activities in stream sanitation, the USPHS has now begun basic studies of the Columbia river and its tributaries. Acitive field work began July 1st, and is expected to be completed in two years. The Environmental Health Center, of the USPHS, is directing the Columbia river studies. Under direction of Ralph C. Palange, sanitary engineer, a local staff of 14 persons will be based in Richland; the group includes sanitary engineers, chemists, biologists, and bacteriologists. The work is part of the USPHS's nationwide studies to assemble information necessary for the development of comprehensive pollution control programs.

Sincerely,

The Staff,
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